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PATENT ABSTRACTS OF JAPAN

(21) Application number: **11269515**(51) Intl. Cl.: **H01L 21/3065 H01L 29/78**(22) Application date: **22.09.99**

<p>(30) Priority:</p> <p>(43) Date of application publication: 06.04.01</p> <p>(84) Designated contracting states:</p>	<p>(71) Applicant: TOSHIBA CORP</p> <p>(72) Inventor: MITSUTAKE KUNIHIE USHIKU YUKIHIRO</p> <p>(74) Representative:</p>
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(54) **METHOD FOR
MANUFACTURING
SEMICONDUCTOR DEVICE**

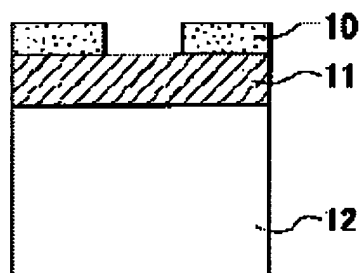
(57) Abstract:

PROBLEM TO BE SOLVED: To manufacture a hollow in a substrate with satisfactory controllability.

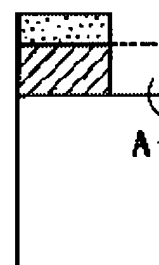
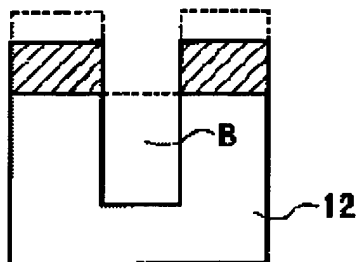
SOLUTION: This method comprises a thin film accumulating step for accumulating a thin film on a semiconductor substrate (a), a thin film opening step for forming an opening at the thin film, by removing one part of the thin film and exposing the semiconductor substrate (b), a groove forming step for forming a groove having an opening which is not larger than the opening at the semiconductor substrate by removing one part of the exposed semiconductor substrate (d), and a heat treatment step for carrying out heat treatment to the groove and closing the opening of the groove (e).

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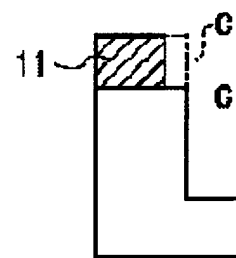
(a) 処理前



(b) 薄膜エ

(c) 反応性イオンエッチング
およびレジスト除去

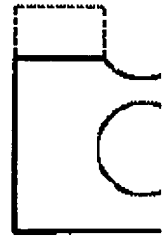
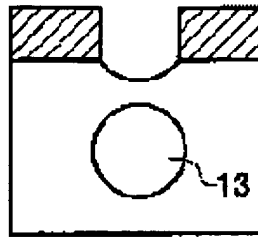
(d) 薄膜後:



(e) 熱処理

(f) 薄膜除:

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10 : レジスト膜
11 : 薄膜

12 : 基板
13 : 空洞